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EXAMINER	
WASHINGTON, JAMARES	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/783,370	TOUURA, KOUSUKE	
	Examiner	Art Unit	
	JAMARES WASHINGTON	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16,18-36,38 and 39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16, 18-36, 38 and 39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The amendments and response received on December 31, 2007 have been entered. Claims 1-39 are currently pending with claims 1, 13-15, 22, 36 and 38 having been amended. Claims 17 and 37 have been canceled. The amendments and response are addressed hereinbelow.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4-9, 11, 12, 15, 16, 18, 20, 21, 25-30, 32, 33, 36, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuyuki Hirata et al (US 6462838 B1) in view of Masaki Tanaka et al (US 5754920).

Regarding claim 1, Hirata et al discloses an image forming apparatus (Fig. 1 numeral 1 copying machine) comprising:

an image-forming unit (Fig. 1 numeral 30 electrographic printer) for forming a correcting image for correcting gradations of an output image (Fig. 12 numeral 90 AIDC test patterns. "... the AIDC patterns are measured so that the result of measurement may be reflected in the correspondence between 256 gradation levels of the input to the gradation reproduction circuit 50 and 8 gradation levels of the output therefrom and thereby the density type gradation reproduction for C, M, Y and K may be kept constant" at column 12 line 13), on a bearing body (Fig. 12 numeral 34 belt);

a sensor (Fig. 12 numeral 37 AIDC sensors) for measuring reflected light quantity of the correcting image formed on the bearing body ("The AIDC sensors 37 are photosensors for detecting the image densities of the AIDC patterns (FIG. 12) corresponding to test patterns" at column 5 line 17);

a gradation correcting unit for correcting the gradations of the output image (Fig. 7 numeral 50 Gradation reproduction circuit), based on a measurement result of the measured reflected light quantity of the correcting image ("The provision of the AIDC patterns serves to make the gradation reproduction of an image uniform all over even if the internal environment of the copying machine 1 is made uneven" at column 12 line 25).

Hirata et al fails to disclose or fairly suggest a timing correcting unit for detecting a shift of measurement timing based on the measurement result by the sensor and for correcting the detected shift of the measurement timing.

Tanaka et al, in the same field of endeavor, teaches a timing correcting unit (Col. 1 line 65-Col. 2 line 3) for detecting a shift of measurement timing (Col. 1 lines 65-66), based on the

measurement result by the sensor (Col. 1 line 66-Col 2. line 1), and for correcting the detected shift of the measurement timing (Col. 2 lines 1-3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the sensor for measuring reflected light quantity of a correcting image as disclosed by Hirata et al to utilize the timing correcting unit for detecting a shift of measurement timing as taught by Tanaka et al because "the characteristic value of the object of [detection] cannot be detected with precision when the detection timing of the sensor detecting a standard pattern formed on the surface of a photosensitive member lags (Tanaka et al, Col. 1 lines 35-39).

Hirata et al fails to disclose or fairly suggest wherein the gradation correcting unit corrects the gradations of the output image using the measurement result which is measured at the timing corrected by the timing correcting unit.

However, Hirata et al wherein the gradation correcting unit corrects the gradations of the output image in view of Tanaka et al wherein the sensor is equipped with a timing correcting unit to detect and correct a shift of measurement timing would have been obvious to a person of ordinary skill in the art at the time the invention was made to simply substitute the sensor as disclosed by Hirata et al with the sensor of Tanaka et al because the substituted sensor is known in the art and the results of the substitution would have been predictable. Tanaka et al teaches correcting the gradations of the output image using the measurement result (Col. 2 lines 21-26), therefore it would be obvious for the invention disclosed by Hirata et al to employ the same gradation corrections based on the findings and/or correction of the sensor timing taught by Tanaka et al.

Regarding claim 4, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the timing correcting unit corrects the measurement timing of the sensor by the shift quantity of the detected measurement timing (see rejection of claim 1 wherein the "correction means" taught by Tanaka et al "eliminates the timing lag when a timing lag is determined by said determination means at Col. 2 lines 1-3)

Regarding claim 5, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the timing correcting unit corrects the shift of the measurement timing by selecting the measured value to be applied as an output density value of each gradation in the gradation pattern among the respective measured values measured by the sensor according to the detected shift quantity of the measurement timing (see rejection of claim 1wherein sampling of a subsequent sampling cycle is thereby conducted based on a corrected timing and a controller controls an image forming operation in accordance with the sampling values after a sampling means for sampling density values at a plurality of sampling points on a standard pattern image formed on said photosensitive member by operating said sensor with a timing at which said sensor confronts said standard pattern image is implemented); and

the gradation correcting unit (Fig. 7 numeral 50) performs the gradation correction based on the measured value selected as the output density value of each gradation (Col. 12, lines 19-30; also see rejection of claim 1 wherein the sensor of Tanaka is substituted into the invention disclosed by Hirata).

Regarding claim 6, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the correcting image comprises a gradation pattern comprising a plurality of gradations (Col. 12, lines 38-40); and

the timing correcting unit detects the respective shift of the measurement timing from the plurality of gradation patterns (see rejection of claim 5), and performs the correction of the measurement timing by applying the shift quantities of the measurement timing (see rejection of claim 1 wherein the "correction means" taught by Tanaka et al "eliminates the timing lag when a timing lag is determined by said determination means at Col. 2 lines 1-3, Tanaka et al), which are detected in the respective gradation patterns (Fig. 12 numeral 90 AIDC patterns), to each of the gradation patterns ("... each AIDC sensor 37 may be allowed to detect the image densities of six AIDC patterns 90 one after another" column 12 line 45. Therefore, correction must be preformed for each gradation pattern).

Regarding claim 7, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the correcting image comprises a gradation pattern comprising a plurality of gradations (Col. 12, lines 38-40); and

the timing correcting unit detects the respective shift of the measurement timing from the plurality of gradation patterns (see rejection of claim 5), and corrects the shift of the measurement timing by applying an average value of the shift quantities (see rejection of claim 1

wherein Tanaka teaches correction of the shift of measurement timing; Col. 7 lines 50-52 Tanaka explains the determination of the shift is made based on the average value of output of AIDC sensor), which are detected in the respective gradation patterns, to all of the gradation patterns ("...each AIDC sensor 37 may be allowed to detect the image densities of six AIDC patterns 90 one after another" column 12 line 45. Therefore, correction must be preformed for each gradation pattern), as a common shift quantity.

Regarding claim 8, Hirata et al discloses the image forming apparatus as rejected in claim 6 above, wherein:

the plurality of gradation patterns are identical (Col. 12 lines 57-61. Each color (C, M, Y, K) is represented by the same set of gradation values as described in the aforementioned paragraph. The 8 sets of values ranging from 0-224, excluding 0 and 224.)

Regarding claim 9, Hirata et al discloses the image forming apparatus as rejected in claim 6 above, wherein:

the plurality of gradation patterns are different from one another (Col. 12, lines 38-40).

Regarding claim 11, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the correcting image comprises a plurality of colors (AIDC patterns are gradation levels of input image data. Gradation levels are gradual changes from one color to another.);

the gradation correcting unit (Fig. 7 numeral 50 Gradation reproduction circuit) performs the gradation correction of each color based on the measured value of the reflected light quantity of the correcting image comprising the plurality of colors ("The provision of the AIDC patterns serves to make the gradation reproduction of an image uniform all over even if the internal environment of the copying machine 1 is made uneven" at column 12 line 25); and

the timing correcting unit corrects the shift of the measurement timing (see rejection of claim 1) at every measurement of the reflected light quantity of the correcting image of each color (see rejection of claim 1 regarding the AIDC patterns for each color).

Regarding claim 12, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein:

the bearing body is a transfer member (Fig. 1 numeral 34 transfer belt); and

the sensor measures the reflected light quantity of the correcting image formed on the transfer member (Col. 12 lines 10-19).

Regarding claim 15, Hirata et al discloses an image forming apparatus (Fig. 1 numeral 1) comprising:

a bearing body on which an image to be detected is formed (Fig. 12 numeral 34 transfer belt);

a sensor for performing a plurality of measurements at a prescribed interval (Fig. 12 numeral 37 AIDC sensor performing measurements of the test patterns), to a surface of the bearing body moving relatively (Fig. 12 belt moving in the subscanning direction as depicted);

a timing correcting unit for (Col. 1 line 65-Col. 2 line 3, Tanaka as rejected in claim 1) detecting a timing shift between a specified timing prescribed in advance (Col. 9 lines 43-44, Tanaka) and a timing at which a measured value having a largest change in value (Col. 9 lines 47-48 wherein Vnmax is the maximum value) out of a plurality of measured values which are sequentially measured by the sensor is obtained (Col. 9 lines 47-48 wherein n is a value 1, 2,...(nmax-1) would be the values between adjacent sampling points) , and for correcting a timing of measuring the image to be detected based on the detecting timing shift (Fig. 10 step s9/s11 wherein the detection time is delayed or hastened accordingly, Tanaka); and

a control unit for determining a measured value which is measured by the sensor at the corrected timing as a measured value of the image to be detected (see rejection of claim 1 referencing Tanaka wherein "a controller which controls an image forming operation in accordance with the sampling values" is represented, Col. 2 lines 5-7).

a judging unit for judging which measurement result is a detection result of the image to be detected (Col. 14 lines 64-66. The output from the sensors detecting the patterns are periodically fetched therefore there must exist a judgment unit for distinguishing the measurement output over other obtained image data.), which is formed on the surface of the bearing body (Fig. 12 numeral 34 Belt), among the plurality of measurement results.

Regarding claim 16, Hirata et al discloses the image forming apparatus as rejected in claim 15 above, wherein the sensor is controlled to perform a plurality of times the measurements at a fixed time interval (Col. 13 lines 52-63).

Regarding claim 18, Hirata et al discloses the image forming apparatus as rejected in claim 15 above, wherein the image to be detected is a gradation pattern comprising a plurality of gradation images different from one another (Col. 12, lines 38-40).

Regarding claim 20, Hirata et al discloses the image forming apparatus as rejected in claim 15 above, wherein the bearing body is any one of a photosensitive body, a transfer member onto which a toner image on the photosensitive body is transferred, and a recording material on which an image is recorded (Col. 5, lines 3-5).

Regarding claim 21, Hirata et al discloses the image forming apparatus as rejected in claim 15 above, further comprising:

a storage unit for storing the image to be detected ("The output from each of the AIDC sensors 37 is periodically fetched..." at column 14 line 64. The output values from the AIDC sensors must be stored in a storage unit for the information to be fetched periodically.);

an image forming main body unit for forming the image to be detected (Fig. 1 numeral 30 "Printer"), which is stored in the storage unit (storage unit storing AIDC sensor output as previously stated), on the bearing body (transfer belt as previously rejected); and

a gradation correcting unit for correcting gradations of an output image output from the image forming main body unit (Col. 12 lines 10-19), based on a result of the measurement of the image to be detected by the sensor (see rejection of claim 15 wherein the correcting image is detected utilizing the correct timing).

Regarding claim 25, Hirata et al discloses the method performed by the apparatus as rejected in claim 4 above.

Regarding claim 26, Hirata et al discloses the method performed by the apparatus as rejected in claim 5 above.

Regarding claim 27, Hirata et al discloses the method performed by the apparatus as rejected in claim 6 above.

Regarding claim 28, Hirata et al discloses the method performed by the apparatus as rejected in claim 7 above.

Regarding claim 29, Hirata et al discloses the method performed by the apparatus as rejected in claim 8 above.

Regarding claim 30, Hirata et al discloses the method performed by the apparatus as rejected in claim 9 above.

Regarding claim 32, Hirata et al discloses the method performed by the apparatus as rejected in claim 11 above.

Regarding claim 33, Hirata et al discloses the method performed by the apparatus as rejected in claim 12 above.

Regarding claim 36, Hirata et al discloses the method performed by the apparatus as rejected in claim 15 above.

Regarding claim 38, Hirata et al discloses the method performed by the apparatus as rejected in claim 19 above.

Regarding claim 39, Hirata et al discloses the method performed by the apparatus as rejected in claim 21 above.

3. Claims 2, 13, 19, 22, 23 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al and Tanaka et al as applied to claims 1 and 18 above, and further in view of Ryo Ando et al (US 5600404).

Regarding claim 2, Hirata et al discloses the image forming apparatus as rejected in claims 1, wherein:

the correcting image comprises a gradation pattern comprising a plurality of gradations (Fig. 12 numeral 90 AIDC patterns, Hirata);

the sensor measures the reflected light quantity of the correcting image at a fixed interval timing (Fig. 12 numeral 37 AIDC sensor performing measurements of the test patterns. "The aforesaid six AIDC patterns 90 of which each file consists are prepared over again on the basis

of new specific gradation levels of an input image data, and the image densities of these six AIDC patterns 90 are measured" at column 13 line 52),

the timing correcting unit (Col. 1 line 65-Col. 2 line 3, Tanaka as rejected in claim 1) detects a shift between a specified timing prescribed in advance (Col. 9 lines 43-44, Tanaka) and a timing at which a measured value having a largest change of measured light quantity value in a vicinity of the specified timing is measured (Col. 9 lines 47-48 wherein Vnmax is the maximum value), as the shift of the measurement timing, based on the measured values measured at the fixed interval timing (Col. 9 lines 47-48 wherein n is a value 1, 2,...(nmax-1) would be the values between adjacent sampling points).

Hirata et al does not disclose or suggests the timing correcting unit detects a shift between a specified timing prescribed in advance as a timing at which a measurement of **a head part of the gradation pattern is started**.

Ando et al, in the same field of endeavor, teaches the shift between specified timing prescribed in advance as the timing at which a measurement of a head part of the gradation pattern is started ("...a specific pattern image of a single color is selected as the reference (i.e., a reference pattern image)" at column 3 line 41. Ando).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the image forming apparatus as disclosed by Hirata et al to incorporate the teachings of Ando et al where the timing shift is measured from one gradation patch to the next which would constitute the “head part” of the gradation pattern to introduce the largest change of the measured light quantity value in a vicinity of the specified timing because it would provide

distinguishable reference points for measurements where the transition to the next measurement reading would not be misconstrued for the previous gradation patch readings.

Regarding claim 13, Hirata et al discloses an image forming apparatus as rejected in claim 2 above, wherein the gradation correction unit (Fig. 7 numeral 50 Gradation reproduction circuit) corrects the gradations of the output image using the measurement result which is measured at the timing corrected by the timing correcting unit ("The provision of the AIDC patterns serves to make the gradation reproduction of an image uniform all over even if the internal environment of the copying machine 1 is made uneven" at column 12 line 25").

Regarding claim 19, Hirata et al discloses the apparatus as rejected in claim 18 above, wherein:

the sensor performs a plurality of times the measurements of reflected light quantities at the prescribed interval (Fig. 12 numeral 37 AIDC sensor performing measurements of the test patterns. "The aforesaid six AIDC patterns 90 of which each file consists are prepared over again on the basis of new specific gradation levels of an input image data, and the image densities of these six AIDC patterns 90 are measured" at column 13 line 52); and

the timing correcting unit detects a shift between the specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started, and a timing at which a measured value having a largest change of measured light quantity value in a vicinity of the specified timing is measured, as the shift of the measurement timing, based on the plurality of measurement results by the sensor (see rejection of claim 2 above), and corrects the

specified timing so as to remove the shift (Fig. 10 step s9/s11 wherein the detection time is delayed or hastened accordingly, Tanaka (as rejected in claim 12 above)).

Regarding claim 22, Hirata et al discloses the gradation correction method performed by the apparatus as rejected in claim 13 above.

Regarding claim 23, Hirata et al discloses the method as rejected in claim 22 above, wherein:

the correcting image comprises a gradation pattern comprising a plurality of gradations (Fig. 12 numeral 90 AIDC patterns, Hirata);

the measuring is performed by measuring the reflected light quantity of the correcting image at a fixed interval timing (Fig. 12 numeral 37 AIDC sensor performing measurements of the test patterns. "The aforesaid six AIDC patterns 90 of which each file consists are prepared over again on the basis of new specific gradation levels of an input image data, and the image densities of these six AIDC patterns 90 are measured" at column 13 line 52);

the detecting and the correcting of the shift is performed by detecting a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started, and a timing at which a measured value having a largest change of measured light quantity value in a vicinity of the specified timing is measured, as the shift of the measurement timing, based on the measured values measured at the fixed interval (see rejection for claim 2).

Regarding claim 34, Hirata et al discloses the method performed by the apparatus as rejected in claim 13 above.

4. Claims 3, 14, 24 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al and Tanaka et al as applied to claim 1 and 22 above, and further in view of Ryo Ando et al and well known principles in the image processing art.

Regarding claim 3, Hirata et al discloses the image forming apparatus as rejected in claim 1 above, wherein the correcting image comprises a gradation pattern comprising a plurality of gradations (Fig. 12 numeral 90 AIDC patterns, Hirata);

the sensor measures the reflected light quantity of the correcting image at a fixed interval timing (Fig. 12 numeral 37 AIDC sensor performing measurements of the test patterns. "The aforesaid six AIDC patterns 90 of which each file consists are prepared over again on the basis of new specific gradation levels of an input image data, and the image densities of these six AIDC patterns 90 are measured" at column 13 line 52, Hirata), and

the timing correcting unit detects a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started as rejected by Hirata as modified by Ando in claim 2 above.

Hirata fails to disclose or suggest the timing at which a measured value near to an intermediate light quantity value of measured values in a vicinity of the specified timing is measured, as the shift of the measurement timing, based on the measured values measured at the fixed interval timing.

However, interpolation practices are well known in the art of image processing to use a discrete set of known data points to achieve new, more accurate data points. (Official Notice)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the well known interpolation teachings in the art in the image forming apparatus as disclosed by Hirata by using the timing at which a measured value near to an intermediate light quantity value of the measured values in a vicinity of the specified timing is measured, as the shift of the measurement timing, based on the measured values measured at the fixed interval timing to achieve more accuracy in determining the head part of the next gradation patch from sensor readings before and after the supposed start of the next gradation patch.

Regarding claim 14, see rejection of claim 3 above. Hirata et al further teaches wherein:

the timing correcting unit corrects the detected shift of the measurement timing (Fig. 10 step s9/s11 wherein the detection time is delayed or hastened accordingly, Tanaka); and

the gradation correcting unit corrects the gradations of the output image using the measurement result which is measured at the timing corrected by the timing correcting unit (Col. 12, lines 19- 30; also see rejection of claim 1 wherein the sensor of Tanaka is substituted into the invention disclosed by Hirata).

Regarding claim 24, Hirata et al of the Hirata-Ando combination discloses the gradation correction method as rejected in claim 22 above, wherein:

the correcting image comprises a gradation pattern comprising a plurality of gradations (Fig. 12 numeral 90 AIDC patterns, Hirata);

the measuring is performed by measuring the reflected light quantities of the correcting image at a fixed interval timing (Fig. 12 numeral 37 AIDC sensor performing measurements of the test patterns. "The aforesaid six AIDC patterns 90 of which each file consists are prepared over again on the basis of new specific gradation levels of an input image data, and the image densities of these six AIDC patterns 90 are measured" at column 13 line 52); and

the detecting and the correcting of the shift is performed by detecting a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started, and a timing at which a measured value near to an intermediate light quantity value of measured values in a vicinity of the specified timing is measured, as the shift of the measurement timing, based on the measured values measured at the fixed interval timing (please see rejection for claim 3).

Regarding claim 35, Hirata et al discloses the method performed by the apparatus as rejected in claim 14 above.

5. Claims 10 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al, Tanaka et al, and Ando et al as applied to claims 2 and 23 above, and further in view of Yoichiro Maebashi et al (US 6898381 B2).

Regarding claim 10, Hirata et al of the Hirata-Ando combination discloses the image forming apparatus as rejected in claim 2 above.

Hirata fails to disclose or suggest wherein each gradation of the gradation pattern is formed in order that the measurement by the sensor is performed in an order from a high density gradation to a low density gradation.

Maebashi et al, in the same field of endeavor, teaches each gradation of the gradation pattern is formed in order that a measurement by the sensor is performed in an order from a high density gradation to a low density gradation ("... whereby the density of the toner patch 64 from high to low densities can be detected..." Col. 5 lines 48-53, Maebashi).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate into the image forming apparatus as disclosed by Hirata the teachings of Maebashi where the gradation patterns are formed in order that a measurement by the sensor is performed in an order from a high density gradation to a low density gradation because it would provide distinguishable reference points for measurements where the transition to the next measurement reading would not be misconstrued for the previous gradation patch readings.

Regarding claim 31, Hirata et al of the Hirata-Ando combination discloses the method as rejected in claim 23 above.

Hirata fails to Hirata fails to disclose or suggest wherein each gradation of the gradation pattern is formed in order that the measurement by the sensor is performed in an order from a high density gradation to a low density gradation.

Regarding these limitations, please see rejection for claim 10.

Response to Arguments

6. Applicant's arguments with respect to independent claims 1 and 13-15, and all claims dependent thereupon, have been considered but are moot in view of the new grounds of rejection introducing Tanaka et al.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMARES WASHINGTON whose telephone number is

(571)270-1585. The examiner can normally be reached on Monday thru Friday: 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/King Y. Poon/
Supervisory Patent Examiner, Art Unit 2625

Jamares Washington
Junior Examiner
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March 17, 2008